

## Claims

1. A method of treating neovascularization in the eye of  
5 patient comprising:-  
introducing a detectable marker into the circulation of the  
patient at a point remote from the eye;

observing a region of suspected  
neovascularization in the eye after introducing  
10 the marker;

detecting the location of the onset of the marker  
into the region in order to determine the  
location of a feeder vessel to the region of  
neovascularization or an anomaly in the retinal  
15 pigment epithelium; and  
photocoagulating the feeder vessel to prevent it  
from feeding blood to the neovascularization

2. A method according to Claim 1, wherein the marker is  
20 a fluorescent dye, the region is illuminated by radiation  
that excites the dye and the first appearance of the dye in  
the region is detected as an increase in brightness by a  
predetermined amount above background levels.

3. A method according to Claim 1 or 2, for treating  
25 neovascularization in a Choroidal Neo-Vascular Membrane  
(CNVM) in Age-related Macular Degeneration.

4. A method according to any of Claims 1 to 3, wherein  
30 the region is observed by recording a succession of images  
of the region using an image recorder and subsequently  
examining the recorded images to identify the location of  
a blood vessel feeding blood into the region.

5. A method according to Claim 4, wherein the image  
35 recorder captures images at a rate of at least 30 per  
second.

T02221 82521650

6. A method according to Claim 4 or 5, wherein recording of images of the region is triggered by trigger means associated with the image recorder and sensitive to an increase of the marker in the region.

7. A method according to any of Claims 1 to 6, wherein the blood vessel is treated by using a laser.

8. A method according to any of Claims 1 to 7, further comprising introducing a second detectable marker into the circulation of the patient, and detecting the location of the second detectable marker in the region so as to determine the positions of blood vessel walls in the region.

9. A method according to Claim 8, comprising comparing the location of the first appearance of the first detectable marker into the region with the position of the blood vessel walls located by the second detectable marker to determine and/or confirm the location of a blood vessel feeding blood into the region.

10. A method according to any of Claims 7 to 9, comprising treating the blood vessel using a laser wherein the waveband of the laser is the same as the absorption peak in the wave band of the second detectable marker.

11. A method according to any of the preceding claims, wherein a change in brightness is measured at the location of the onset of the marker and recorded against time to facilitate determining the locations of the earliest onset of the marker into the feeder vessel.

12. A method according to claim 11, wherein the change in brightness is recorded graphically.

13. A method according to claims 4-6 wherein an image (or

images) showing the earliest appearance (of the first marker) is made semi-transparent and then is superimposed on the real-time image in which the second marker is introduced, the presence of the second marker in underlying locations (in real-time) indicating and confirming the suspected feeder vessels; and absence of the second marker in underlying locations indicating and confirming that the suspected feeders have been coagulated successfully.

10 14. Apparatus for examination of neovascularization in an eye of a patient, comprising:-

15 a light source for exciting a dye introduced into the circulation of the patient;  
an image generator for generating an image of a region of the eye under examination; and  
an image recorder for recording a plurality of images of the region.

20 15. Apparatus according to Claim 14, wherein the image recorder can record images at a rate of at least 30 per second.

25 16. Apparatus according to either of claims Claim 14 or 15, further comprising trigger means associated with the image recorder and sensitive to an increase in the brightness of the marker in the region for triggering the image recorder to start recording when the brightness rises above a predetermined level.

30 17. Ophthalmological apparatus having a lens system for examining and treating the eye, whereby neovascularization can be diagnosed by introducing a marker into the circulatory system and detecting the marker in the foveal-macular region of the eye; the apparatus  
35 comprising:

a laser source, an illumination source and an image intensifier arranged on respective optical

TOEET 8251650

paths of the lens system;  
a high speed CCD camera coupled to the image intensifier and to a video image generating system whereby frames of image information can be captured and stored in which the onset of the marker into a feeder vessel to the choroidal neo-vascular membrane (CNVM) can be detected, so that the laser source can be used to photocoagulate the feeder and thereby treat the neovascularization.

18. Apparatus according to claim 17, wherein the lens system includes confocal imaging paths.

19. Apparatus according to claim 17 or 18 including means responsive to an increase in brightness in an image generated in the frames so as to signal the arrival of the marker in the foveal-macular region of the eye so as to trigger the image generating system to begin recording frames at a frame rate fast enough to enable the onset of the marker in the feeder vessel to be determined, as well as subsequent filling of the feeder vessels, before the marker fills the visible retinal vasculature.

20. Apparatus according to any of claims 17- 19, wherein the marker is fluorescent and the light source emits radiation that excites the fluorescent marker.

21. Apparatus according to claim 20, wherein a second fluorescent marker is introduced into the circulation and including processing means programmed to detect the location of the second marker so as to determine the position of blood vessel walls so as to build up a map or network of the vasculature including feeder vessels, and to show an image or images of the location of the onset of the first marker against the images of the vasculature, to facilitate determining the location of the feeder vessel.

add an